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7590 07/25/2002  
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EXAMINER

GLASS, CHRISTOPHER W

ART UNIT PAPER NUMBER

2878

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/617,372

Applicant(s)

BREMER, JAMES C

Examiner

Christopher W. Glass

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,672,866 to Messina. Figure 4 of Messina shows a means for scanning a field of view of an imager across a field of regard using a scan mirror **34** mounted on a gimbal **30** having an inner axis and an outer axis (see Figure 4, Column 1, lines 53-54, and Column 3, lines 35-37), the method comprising sweeping the field of view across the field of regard in a selected direction by rotating the gimbal about the inner axis while maintaining the gimbal at a fixed angle with respect to the outer axis. While the device of Messina progresses to a subsequent scan position by turning around the aircraft having the imaging means, and it does not specifically teach rotating the outer axis of the gimbal to progress to a subsequent scan position, it would have been obvious to implement the latter process. The imaging means of Messina (comprising the gimbal **30**, platform **22**, and scanning mirror **34**) could have been configured as to rotate the gimbal on an outer axis and effectively progress the system to a subsequent scanning position, rather than having to unnecessarily maneuver the host aircraft in a series of turns and sweeping formations.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,672,866 to Messina.

Regarding claim 2: Figure 4 of Messina shows an apparatus for scanning a two dimensional field of regard, the apparatus comprising a telescope **26** having a focal plane and a field of view, one or more image sensors **28** disposed at the focal plane, and a single optically flat mirror **34** disposed in the object space of the telescope, wherein the flat mirror **34** sweeps the field of view continuously across the field of regard while maintaining a fixed relationship between the rotational direction of scan and the projection of the telescope's focal plane (see Column 5, lines 59-65).

Regarding claim 3: The image sensor **28** is configured to perform time delay and integration imaging (see Column 3, lines 33-54).

Regarding claims 4 and 5: The image sensor **28** is configured to perform multi-spectral imaging and hyperspectral imaging (see Column 1, lines 22-24).

Regarding claim 6: The apparatus of Messina disclosed in Figure 4 comprises a telescope **26**, one or more image sensors **28**, a single optically flat mirror **34**, and a gimbal having an inner axis and an outer axis, the flat mirror **34** being mounted to the gimbal (see Column 3, lines 35-37). The flat mirror **34** scans the field of view across the field of regard while maintaining a fixed relationship between the rotational direction of scan and the projection of the telescope's (**26**) focal plane, and wherein the field of view covers the two dimensional

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field of regard via a series of conical arcs, each arc being scanned by rotation about the inner axis of the gimbal (see Column 3, lines 33-54 and Column 5, lines 50-65).

Regarding claims 7-13: to execute the “step-and-stare” scanning approach, the scanning apparatus “is positioned to acquire (integrate and read out) an image” from one region for a period of time, rotate into the next position at the next time interval, and then acquire another image from the next region during a third time period (Column 2, lines 36-37). Platform 22 (Figure 4) sweeps the scanning mirror at a constant rate with respect to the principle inner (scanning) gimbal axis, while remaining stationary with respect to an outer vertical deflection axis. The system then moves for a brief period, at a constant rate, on the vertical deflection axis as the imaging apparatus is stepped into the next scanning position. Figure 5 and lines 7-29 of Column 6 in Messina describe these timing relationships and the procedural coordination in more detail.

### ***Response to Arguments***

5. Applicant's arguments filed June 3, 2002 have been fully considered but they are not persuasive. In regards to the applicant's argument concerning the process by which the Messina imaging system (U.S. Patent No. 5,672,866) progresses to a subsequent scan position (see section D.1. and pages 12-13 of applicant's argument), while the Messina device may consist of turning around the aircraft and flying it along parallel scan paths, rather than by rotating the outer gimbal axis, it would have been obvious to have implemented the means of Messina to operate in this manner. With respect to the limitations of claims 2-5 and 12, and the applicant's argument that the Messina reference does not continuously sweep the field of view across the field of regard (see section D.2. and page 13 of applicant's arguments), the examiner respectfully

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disagrees. Messina specifically cites in Column 3 that “in normal operation, the platform rotates at a constant rate, thus sweeping the telescope’s field of view across a target image area at a constant rate” (Column 3, lines 37-40). Regarding the limitations of claims 6-11 and 13, and the applicant’s argument that the Messina reference does not teach covering a field of view in a series of conical arcs, the examiner also respectfully disagrees. According to the method by which the device of Messina executes imaging an area (see Column 5, lines 50-65), as well as the inherent configuration of the gimbal system, platform, and scanning mirror (see Column 1, lines 46-59, Column 5, lines 25-49, and Figure 4), this system effectively sweeps a field of view continuously across the field of regard. Therefore, the claims are unpatentable and anticipated (claims 1 and 2-13, respectively) by Messina.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher W. Glass whose telephone number is 703-305-1980. The examiner can normally be reached 9:00am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Frank Font can be reached at 703-308-4881. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


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cg

July 18, 2002



STEPHONE ALLEN  
PRIMARY EXAMINER